

Minnesota Pollution Control Agency

January 28, 1985

Mr. Paul Bitter
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Bitter:

Re: Minnesota Pollution Control Agency (MPCA) Review of Plans and Specifications - Calgon Carbon Corporation Granular Activated Carbon System for Reilly Tar and Chemical Corporation Issued January 10, 1985

MPCA Site Response Section staff have reviewed the referenced plans and specifications and have the following comments:

1. The surface loading rate for each adsorber receiving 600 gallons per minute (gpm) would be 7.6 gpm/ft^2 . This loading is greater than the four to five gpm/ft^2 used during the pilot scale testing of the Calgon Filtrasorb 300 Granular Activated Carbon. This increased loading rate may adversely affect the performance of the adsorbers in removing PAH compounds.
2. The Calgon specifications under Section 1.4 Design Summary give a nine minute empty bed contact time at 600 gpm per vessel. Using a ten ft diameter by 14 ft high vessel we calculate a vessel volume of 1100 ft^3 . 600 gpm is the equivalent of $80 \text{ ft}^3/\text{minute}$. 1100 ft^3 divided by $80 \text{ ft}^3/\text{minute}$ equals 13.75 minutes. A contact time of 13.75 minutes would of course be more desirable than a nine minute contact time.
3. The flow velocity of 600 gpm in a six inch pipe is 6.7 feet per second (fps). The ASCE publication "Pipeline Design for Water and Wastewaters" recommends that velocities in a pipe should normally be less than five feet per second so that the friction losses will be within reason. The next larger size pipe may be appropriate for the raw water line.




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4. Drawing 9209 CG-102 shows a six inch influent line splitting into two six-inch lines handling 600 gpm each. 1200 gpm seems a bit much for a six-inch line.
5. What is the source of backwash water? Will it be adequate to provide 1200 gpm for the duration of the backwash process.
6. A check valve may be advisable in the backwash influent line.
7. How is raw water distributed into the top of the adsorber?
8. Performance levels should be set for:
 - a. carbon change - PAH levels in effluent; and
 - b. backwash - psi drop from top to bottom of adsorber.
9. Drawing 9209 CG-101 detail seven shows a Johnson Screen inserted over a tee. It is not clear as to how this is accomplished.

If you wish to discuss these comments please contact me at 612/296-7384.

Sincerely,



Bruce W. Brott, P.E.
Sr. Engineer
Superfund Unit
Site Response Section
Solid and Hazardous Waste Division

BWB/rj